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LITERATURE REVIEW OF MILITARY-RELATED SUICIDE
PREVENTION PROGRAMS
JULY – SEPTEMBER 2009
UPDATE PROVIDED JUNE 2010

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14. ABSTRACT <p>Suicide rates are increasing in the Army. Suicide prevention programs have been implemented in the Army and other military organizations; however, it is not known how many programs are evidence-based or have been systematically evaluated for effectiveness. The purpose of this report is to provide an overview of current literature for evidence-based suicide prevention programs in military populations. The literature search identified only a few suicide prevention programs tailored to the specific needs of the military population. Recommendations include a more rigorous approach to the implementation of suicide prevention programs to identify successful interventions that could be utilized, augmented or combined and evaluated for utility. More specifically, such programs could benefit from including a systematic and integrated evaluation plan as part of the initial program design.</p>					
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EXECUTIVE SUMMARY
USAPHC report No. 23-KM-0C97-10
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JULY 2009-SEPTEMBER 2009
UPDATE PROVIDED JUNE 2010

1. PURPOSE. To provide an overview of current literature for evidence-based suicide prevention programs in military populations.

2. CONCLUSIONS.

- a. Rising suicide rates in the Army are of great concern.
- b. The military population is a unique setting to study and identify suicide prevention programs. The ability to access a large cohort with the capability to track behavioral, socio-economic and physical health records make this population distinctive.
- c. The specific concerns to the Army are inherent to a profession that is unique in the stresses of deployments and combat, along with the familiarity and availability of lethal means.
- d. Few suicide prevention programs have been developed that are tailored to the specific needs of this population, with an Air Force Suicide Prevention Study of broad community-based interventions representing the only military program with effectiveness data.
- e. Limited evidence and wide variability across interventions add to the difficulty of determining if one intervention is more effective than another.

3. RECOMMENDATIONS.

- a. Systematic evaluation of past and current suicide prevention program interventions is needed to identify an evidence-based, effective program meeting the unique needs of this population. Elements of these successful

interventions could be utilized, augmented or combined and evaluated for utility. To date the most successful programs appear to focus more broadly on community and organizationally-based risk factors contributing to suicides and strategies to reduce that risk, including greater involvement of senior leadership in the organization.

- b. Programs need to consider creative and novel means of addressing more than just the known risk factors for suicide. Retrospective psychological autopsies can identify common risk factors in many individuals, but have yet to be able to distinguish which of these individuals may go on to complete suicide.
- c. Future suicide prevention programs and the field of prevention programs as a whole could profit from a more rigorous approach to the implementation of interventions that could be replicated if successful and the data used to further the field of prevention research in general. More specifically, they could benefit from including a systematic and integrated evaluation plan as part of the initial program design.

TABLE OF CONTENTS

1. REFERENCES.....	1
2. PURPOSE.....	1
3. AUTHORITY.....	1
4. BACKGROUND.....	1
5. METHODS.....	2
6. RESULTS.....	4
7. DISCUSSION.....	8
8. RECOMMENDATIONS.....	9
9. POINT OF CONTACT.....	9
Appendices	
A. REFERENCES.....	A-1
B. EXISTING MILITARY SUICIDE PREVENTION PROGRAMS IN THE US..	B-1
C. KNOWN EXISTING AND CURRENT MILITARY SUICIDE PREVENTION PROGRAMS OUTSIDE THE US.....	C-1
D. PUBLISHED MILITARY-RELATED SUICIDE PREVENTION PROGRAMS	D-1

List of Tables

1. Effective Suicide Prevention Programs as listed by NREPP.....5
2. Effective and Promising Programs Designated by SPRC/AFSP.....6

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UPDATED MAY 2010

1. REFERENCES. See Appendix A for a listing of references used in this report.
2. PURPOSE. To provide an overview of current literature for evidence-based suicide prevention programs in military populations.
3. AUTHORITY. This literature review was initiated at the request of the Program Manager, Public Health Assessment Program, USAPHC (Prov).
4. BACKGROUND.
 - a. Suicide rates are steadily increasing in the Army. In 2008, 141 suicides occurred in the US Army. In 2009, this number rose to 166. This is the highest number of suicides on record.
 - b. Suicide prevention programs have been implemented in the Army and in other military organizations; however, it is not known how many programs are evidenced-based and/or have been evaluated for effectiveness. Existing suicide prevention programs for military populations in the US that were identified are presented in Appendix B.
 - c. A literature review was conducted to identify evidence-based, efficacious suicide prevention programs. The review was conducted in the following steps:
 - 1) Review of the programs listed by the Suicide Prevention Resource Center (SPRC) and the National Registry of Evidence-based Programs and Practices (NREPP).
 - 2) Key word searches in PubMed and PsycINFO and The Cochrane Library.

- 3) Review of the World Health Organization's Health Evidence Network.
 - 4) Review of the Behavioral and Social Health Outcomes Program (BSHOP) and Public Health Assessment Program (PHAP) Internal Library.
 - 5) Review of the project memorandum for the 2008 RAND Review of DOD Suicide Prevention Programs (PM-3201-OSD) and the Army Study to Assess Risk and Resilience in Service Members (Army STARRS): A Partnership Between NIMH and the US Army.
- d. Identified programs were then researched individually to identify the focus of the prevention program, assumptions, methodology and data collected by the program. These programs were identified through military sites and publications from the countries of Australia, Canada, France, Israel, Norway, Serbia and Montenegro, Sweden, Switzerland, the Royal Netherlands Army, Ukraine and the United Kingdom which were known to have produced some literature on the subject.

5. METHODS.

- a. Literature Review Conducted to identify evidence-based, efficacious suicide prevention programs.
 - 1) The Suicide Prevention Resource Center (SPRC) identifies programs that have been reviewed by two sources: Substance Abuse and Mental Health Services Administration's (SAMHSA) National Registry of Evidence-Based Programs and Practices (NREPP) is a searchable online registry of interventions for the prevention and treatment of mental and substance use disorders that have been reviewed and rated by independent reviewers. NREPP is funded and managed by SAMHSA. To be eligible for NREPP review, a prevention/intervention program must demonstrate one or more positive outcomes ($p \leq .05$) in mental health and/or substance use behavior; have results published in a peer-reviewed publication or documented in a comprehensive evaluation report; and have publicly available documentation (e.g., manuals, process guides, tools, training materials) describing the intervention and its proper implementation.

- 2) SPRC/American Foundation for Suicide Prevention (AFSP) Evidence-Based practices Project (which stopped conducting reviews in 2005) utilized three expert reviewers to rate the quality of suicide prevention/intervention programs based on 10 criteria: theory, intervention fidelity, design, attrition, psychometric properties of measures, analysis, threats to validity, safety, integrity, and utility. Programs meeting standards of evidence were classified as either Effective or Promising, as listed in Table 2.
- 3) PubMed and PsycINFO databases were used to identify published research on suicide prevention programs. PubMed is a service of the U.S. National Library of Medicine that includes over 19 million citations from MEDLINE and other life science journals cataloging references dating back to 1948. PsycINFO is an abstract database that catalogs psychological literature from the 1800s to the present. The following keywords were used alone or in combination: suicide prevention program, suicide prevention program NOT school, suicide prevention AND evaluation, suicide prevention AND military, suicide prevention AND Army, suicide prevention AND National Guard, suicide prevention AND Reserve, suicide AND National Guard, suicide AND Reserve, suicide prevention AND Veterans, suicide AND Veterans. Restrictions were not placed on the date of publication.
- 4) The Cochrane Library. A title, abstract and keyword search for: suicide prevention, suicide prevention programs, suicide programs.
- 5) The WHO Health Evidence Network uses a drop down menu. Choices used were: suicide, delivery of care, evidence for health policy, health care systems, health promotion, health systems.
- 6) The project memorandum and proposals for both the RAND Review of DOD Suicide Prevention Programs (PM-3201-OSD) and the Army

Study to Assess Risk and Resilience in Service Members (Army STARRS): A Partnership Between NIMH and the US Army .

- 7) Center for Strategic and National Studies based in Washington DC lists countries by the reported size of their active armed forces. This list was used to search for publications on suicide and suicide prevention in the military. Published articles were found from: Australia, Canada, France, Israel, Serbia and Montenegro, Norway, Sweden, Switzerland, Ukraine and the United Kingdom. Evidence of suicide prevention programs was found only for Australia, Canada, Serbia and Montenegro, Norway and the United Kingdom.

- b. Data Limitations. This review was limited to data that had been published only at the time of this report.

6. RESULTS

- a. Overall There is a dearth of published literature regarding evidence-based suicide prevention programs in the military. In fact, the US Air Force Suicide Prevention Program was the only military-related program reported by NREPP and was rated as a promising, evidence-based program by SPRC/AFSP.
- b. Eight programs, listed in Table 1, met the NREPP standards for effective suicide prevention programs.

Table 1. Effective Suicide Prevention Programs as listed by NREPP

Program Name
American Indian Life Skills Development/Zuni Life Skills Development
CARE (Care, Assess, Respond, Empower)
CAST (Coping and Support Training)
Columbia University TeenScreen
Emergency Room Intervention for Adolescent Females
PROSPECT (Prevention of Suicide in Primary Care Elderly:

Collaborative Trial)
 SOS Signs of Suicide
 United States Air Force Suicide Prevention Program

- c. Twelve programs, listed in Table 2, were considered either effective programs that employed superior evaluation methods to demonstrate a strong causal link between the program and appropriate outcomes. These are marked with an asterisk below. Promising programs were evaluated using less rigorous methods, as determined by the SPRC, or demonstrated a moderate causal link between the program and appropriate outcomes.

Table 2. Effective and Promising Programs Designated by SPRC/AFSP

Category	Suicide Prevention Program Name
Community-Based Programs	United States Air Force Suicide Prevention Program Reduced Analgesic Packaging
Emergency Room Programs	ER Means Restriction Education for Parents* Emergency Room Intervention for Adolescent Females
Primary Care	PROSPECT (Prevention of Suicide in Primary Care Elderly: Collaborative Trial)
School-based Programs	CARE (Care, Assess, Respond, Empower)* CAST (Coping and Support Training)* Columbia University TeenScreen Lifelines SOS Signs of Suicide American Indian Life Skills Development/Zuni Life Skills Development
Service Delivery	Psychotherapy in the Home

- d. The literature searches on PubMed and PsycINFO returned a variety of articles. Most of the general searches for suicide prevention programs returned a number of school-based suicide prevention programs. The number of programs returned from the search was greatly reduced when school-based studies were removed and a military-specific modifier was added to the

search. The number of articles decreased further when an evaluation key word was added to the search. Very few studies specifically note suicide prevention programs for the military, the Veterans Administration, or Department of the Army Civilians. Some literature was found regarding suicide prevention programs in countries outside the United States of America. A table listing these is presented in Appendix C.

- e. The United States Air Force Suicide Prevention Program was the only military-related program reported by NREPP and was rated as a promising, evidence-based program by SPRC/AFSP. Reported results of the effectiveness of the Air Force Suicide Prevention program were based on an active-duty personnel treatment cohort from 1997-2002 and an untreated cohort from 1990-1996¹. Personnel in the cohort who received the prevention program experienced a 44% reduction of risk of committing suicide compared to the cohort of personnel prior to implementing the program ($p < .001$). The reported weaknesses of this study included the limited documentation on the reliability and validity of data on cause of death and the limited control over potential confounding variables. In addition, weakness in implementation was related to the lack of information on how implementers are supposed to use the intervention. No information was provided on how the instructors are selected and trained, how outcome data is collected and organized, or how fidelity of the intervention implementation is assessed or maintained.
- f. A search on the Cochrane Library found two Cochrane reviews dealing with adolescents and school-based suicide prevention programs. Five other reviews were found again of youth, adolescent and school-based programs, while 45 clinical trials were being conducted predominantly on youth, adolescent and school-based programs, or on education and treatment interventions.
- g. The World Health Organizations Health Evidence Network identified only one report of strategies for suicide prevention, again for youth and adolescents. The report notes that many widely-used suicide prevention programs have never been scientifically assessed, thus making it uncertain which are effective. "Due to limited evidence and the heterogeneity of the interventions, it is not possible to determine if one single intervention was more effective than another" (p.2) Findings noted are that "more than half of these

interventions fall into the domain of treatment rather than prevention and maintenance” (p. 4) ².

- h. The RAND National Defense Research Institute (RAND NDRI) has recently completed an independent review of suicide prevention programs across the Services ³. This research was sponsored by the Office of the Assistant Secretary of Defense for Health Affairs and conducted jointly within the RAND Center for Military Health Policy Research and The Forces and Resources Policy Center, part of the RAND NDRI. The document is currently awaiting DOD clearance before it can be disseminated. The aims of this project were:
 - 1) To collect pertinent information on suicide prevention programs in the military and comparable programs in the U.S. civilian population and international militaries (if notable programs exist).
 - 1) To document the extent to which DOD programs reflect state-of-the-art suicide prevention practices.
 - 2) To examine how existing DOD suicide prevention programs are currently implemented.
 - 3) To conduct data analyses using data from the Death Surveillance Division, Office of Medical Examiner, Armed Forces Institute of Pathology and the DOD Suicide Event Report database.
 - 4) To develop recommendations that the DOD could use to enhance and evaluate suicide prevention activities
- i. The National Institute of Mental Health (NIMH) is leading a five-year long investigation of suicide and mental health in military personnel including members of the National Guard and Reserves. The \$50 million project is funded by the U.S. Army. The ultimate goals of the study are to identify risk and protective factors for suicide, to provide an evidence-base for interventions to prevent and treat mental health problems, and to reduce suicide rates. To meet these goals, investigators plan:

- 1) To consolidate information from various Army databases to identify protective and risk factors.
 - 2) To conduct a case-control study matching cases of suicide attempts/completions with demographically similar controls to uncover risk and protective factors.
 - 3) To administer a survey to 90,000 active Army personnel representing the entire Army regarding the prevalence of suicide-related behaviors and risk and protective factors. In addition, blood and saliva samples will be collected for participants as part of a genetic study of suicide risk factors.
 - 4) To administer a survey, similar to the all-Army representative survey, to all of the 80,000 to 120,000 recruits who enter the Army.
 - 5) To identify current prevention strategies that show effectiveness in reducing suicide risk with the goal of developing evidence-based interventions applicable to a military population.
- j. An epidemiological review of selected demographic and behavioral health risk factors (Technical Report No. 12-HF-0BHP-09) has been completed. The point of contact is Dr Bruce Jones, (410) 436-3534. (Bachynski, K., Black, S., Canham-Chervak, M., Laseinde, E. Jones, B. (2009) Epidemiological Report No 12-HF-0BHP-09 US Army Suicides, 2007-2008: An Analysis of Selected Demographic and Mental/Behavioral Health Risk Factors, November 2009. Unpublished)

7. DISCUSSION

- a. Rising suicide rates in the Army are of great concern.
- b. The military population is a unique setting to study suicide prevention programs. The ability to access a large cohort with the capability to track behavioral, socio-economic and physical health records make this population distinctive. The specific concerns related to suicide in the US Army are

inherent to a profession that is unique in the stresses of deployments and combat, along with the familiarity and availability of lethal means.

- c. Few suicide prevention programs have been developed that are tailored to the specific needs of this population. Only a fraction of those programs provide evaluations, data, and/or evidence of effectiveness with the Air Force Suicide Prevention Study representing the only military program with effectiveness data.
- d. Limited evidence and wide variability across interventions add to the difficulty of determining if one intervention is more effective than another.

8. RECOMMENDATIONS.

- a. Systematic evaluation of past and current suicide prevention program interventions is needed to identify an evidence-based, effective program meeting the unique needs of this population. Elements of these successful interventions could be utilized, augmented or combined and evaluated for utility. To date the most successful programs appear to focus more broadly on community and organizationally-based risk factors contributing to suicides and strategies to reduce that risk, including greater involvement of senior leadership in the organization.
- b. Programs need to consider creative and novel means of addressing more than just the known risk factors for suicide. Retrospective psychological autopsies can identify common risk factors in many individuals, but have yet to be able to distinguish which of these individuals may go on to complete suicide.
- c. Future suicide prevention programs and the field of prevention programs as a whole could profit from a more rigorous approach to the implementation of interventions that could be replicated if successful and the data used to further the field of prevention research in general. More specifically, they could benefit from including a systematic and integrated evaluation plan as part of the initial program design.

9. POINT OF CONTACT. Dr. Trish Prosser is the point of contact for this project. She may be reached at 410-436-7443 (commercial) or 584-7443 (DSN) or by email at Trish.Prosser@us.army.mil.

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APPENDIX A

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APPENDIX B

EXISTING MILITARY SUICIDE PREVENTION PROGRAMS IN THE US

Program Name	Program Components	Organization/DO D Affiliation	Date	Population	Evaluation Status
Air Force Suicide Prevention Program	<p>The population-based Air Force Program implemented 11 initiatives with the goals of enhancing social support, promoting social skills, and changing norms to improve help-seeking behaviors. The initiatives were:</p> <ul style="list-style-type: none"> • Leadership Involvement • Suicide Prevention in Professional Military Education • Guidelines for Use of Mental Health Services Community Preventive Services • Community Education and Training • Investigative Interview Policy • Critical Incident Stress Management 	USAF	1996	All Airmen	Yes. Handley, 1997 ⁴ ; Staal, 2001 ⁵

	<ul style="list-style-type: none"> • Integrated Delivery System (IDS) • Limited Privilege Suicide Prevention Program • Behavioral Health Survey • Suicide Event Surveillance System <p>All program materials are available on the program website (afspp.afms.mil). Materials include a "Leader's Guide to Managing Personnel in Distress," a slide presentation that lists the steps necessary for becoming an instructor. The program is credited with an Integrated Service Delivery approach that guides leaders on moving concerns through the chain of command.</p>				
US Navy Suicide Prevention Program	<p>Information and awareness of the risk and protective factors for suicide; resources; definitions of suicide related behaviors; command suicide prevention/crisis response plan checklist. 2-day "Suicide Awareness and Prevention" workshops "intended to provide leadership with available resources and</p>	US Navy	unknown	All Navy	Unavailable

	assistance to institutionalize fleet requirements regarding implementation and execution of suicide prevention and awareness policies.				
Applied Suicide Intervention Skills Training (ASIST)	2 day training for “gatekeepers”			Army “Gatekeepers”	Literature on improvements in knowledge and skill, but mixed results for behavior change ⁶ . US Air Force personnel demonstrated improved risk identification and assessment, but did not produce changes in intervention-related behaviors ⁷
Ask, Care, Escort (ACE - SI) Suicide Intervention Training	All Soldiers are required to receive ACE-S sensitization, a 1 hour block of training annually. There is also a 4-hour training. Chaplains and their assistants are responsible for facilitating this training. Chaplains do not keep record of which units have completed this training.	USAPHC/OTSG	2008	All Army	Evaluation at preliminary stages with URMIC
Beyond the Front	Video presentation	OTSG	2008	All Army	
Question, Persuade, Refer (QPR)	This certification course trains Instructors to teach QPR for Suicide Prevention to their community.	QPR Institute/OTSG	Unknown		No evaluation information

APPENDIX C

KNOWN EXISTING AND CURRENT MILITARY SUICIDE PREVENTION PROGRAMS OUTSIDE THE US

Program Name	Program Components	Date	Population	Evaluation Status
Keep Your Mates Safe Suicide Prevention Training (KYMS-SPT)	Two-hour face to face Builds on the basic awareness package providing more detailed information regarding mental health first aid, risk factors and crisis management Incorporates 'question and answer' case examples, group discussion and role-play	Current	Australian Defence Force	Unknown
Minimising Risk, Recognizing Onset Trauma Risk Management (TRiM)	Measures to reduce risk and increase awareness "Decompression" time TRiM peer support delivered by trained people already in the affected soldiers unit	Current	British Army	Unknown
Canadian Armed Forces ⁸	Selection, resilience training and risk factor modification "Be the Difference" Campaign	Unknown	Canadian Army	Unknown

APPENDIX D

PUBLISHED MILITARY-RELATED SUICIDE PREVENTION PROGRAMS

Authors	Title	Date	Population	Description	Outcomes
Matthieu, M. M. Cross, W. Batres, A. R. Flora, C. M. Knox, K. L ⁹	Evaluation of gatekeeper training for suicide prevention in veterans	2008	VA Counseling Center Staff	A national cohort (n = 602) of community based counseling center staff from the U.S. Department of Veterans Affairs (VA) participated in an evaluation of a brief standardized gatekeeper training program and a scripted behavioral rehearsal practice session.	Gatekeeper training was effective for improving skills and confidence. A significant difference in knowledge and self efficacy was observed from pre to post (p < .0001) with the nonclinicians showing larger effect sizes for knowledge (0.96 vs. 0.42) and self efficacy (0.89 vs. 0.41). The authors did not evaluate the impact on suicide or other external risk factors.

Bodner, E. Iancu, I. Sarel, A. Einat, H ¹⁰	Efforts to support special-needs soldiers serving in the Israeli defense forces	2007	Israeli Defense Forces (IDF)	The Israeli military's approach identifies special needs at-risk populations and targets cognitive, emotional, and behavioral support to that group	Reduction in suicide rate in treated group.
Gordana, D. Milivoje, P ¹¹	Suicide prevention program in the Army of Serbia and Montenegro	2007	Army of Serbia and Montenegro	The Army of Serbia and Montenegro implemented a suicide prevention program based on the Air Force Model and emphasized three strategies 1) selection of Soldiers to eliminate Soldiers with serious medical and mental problems), 2) education (suicide risk factors awareness program), and 3) motivation (focus on social concern and mental health work of all employees in the Army and with Family members). This program focused training on three levels: the soldier/professional staff, the primary mental health team in the military unit, and the secondary mental health team in the Medical Center.	Suicides in the Army of Serbia and Montenegro were constantly reducing over the period 2004 to 2005. For soldiers, it was four times less than in the civilian male population.
Jones, D.E. Kennedy, K.R. Hourani, L.L. ¹²	Suicide Prevention in the Military	2006	N/A	This chapter focuses on practical matters in assessment, treatment, and	Our goal is to establish a resource for clinicians and leaders at all levels

				consultation with military leaders regarding at-risk personnel (and family members). To keep the discussion grounded on the issues and concerns of leaders and service providers working in the field, we integrate best practice information with our experiences caring for suicidal patients in forward-deployed operational and hospital settings.	that provides practical ways to make a difference in preventing suicide and suicidal behavior across the entire military
Mann, J. J. et al. ¹²⁻¹⁴	Suicide prevention strategies: a systematic review	2005	N/A	Systematic review of the literature	The best evidence-based strategies for preventing suicide were restricting means to lethal weapons and educating physicians on prevention and intervention techniques
Knox, K.L. Litts, D.A. Talcott, G.W. Catalano Feig, J. Caine, E. ¹⁵	Risk of suicide and related adverse outcomes after exposure to a suicide prevention program in the US Air Force: cohort study	2003	US Air Force Personnel	The same program as below concentrating on stigma and institutional attitudinal change as well as community-wide educational strategies for community prevention efforts(family violence, accidental death, homicide)	Relative risk reductions for suicide were reduced in this population.
Mehlum, L. Swebs, R. ¹⁶	Suicide prevention in the military:	2001	Norwegian Armed Forces	Discussed as having similar components and success as	Similar success to USAF intervention.

	recent experiences for the Norwegian Armed Forces			the USAF Intervention ¹⁷ . Could not find publication.	
None listed	Suicide prevention among active duty Air Force personnel--United States, 1990-1999	1999	US Air Force Personnel	In 1995, senior USAF leaders initiated prevention programs in several commands. In May 1996, an in-depth study by a team of medical and nonmedical civilian and military experts was initiated to produce a comprehensive, communitywide prevention strategy that viewed suicide not only as a medical but a USAF problem, thus addressing overall social, behavior, and health issues.	The plan was implemented across the entire USAF during 1996-1997. This report describes protective and prevention strategies and summarizes the study findings, which indicate that a substantial decline in the suicide rate as associated with the communitywide program.
James, MAJ L.C. Kowalski, MAJ T.J. ¹⁸	Suicide Prevention in an Army Infantry Division: A Multi-Disciplinary Program	1996	Single US Army Brigade	Discusses increased awareness of warning signs and risk factors by personnel now commonly referred to as "gatekeepers", awareness of resources by NCOs and Officers, and increased education for community members	A postscript notes that that the suicide rate had decreased from 3 in one year to 3 in the past 2 years.

